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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,822	02/03/2006	Jean-Christophe Fondeur	33155.28	5869
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BRIGGS AND MORGAN P.A. 2200 IDS CENTER 80 SOUTH 8TH ST MINNEAPOLIS, MN 55402			EXAMINER THOMAS, MIA M	
			ART UNIT 2624	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/539,822	Applicant(s) FONDEUR ET AL.	
	Examiner Mia M. Thomas	Art Unit 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Response to Amendment*

1. This Office Action is responsive to the applicants remarks received on 20 June 2005. Claims 1-11 are canceled and claims 12-22 are pending. Amendments to the specification have been added to instant application 10/539,822.

### *Priority*

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Setlak (US 5,963,679).

### **Regarding Claim 12: (New)**

Setlak discloses a method of determining the living character of an element carrying a fingerprint ("The present invention relates to the field of personal identification and

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verification, and, more particularly, to the field of fingerprint sensing and processing.” at column 1, line 6), comprising the step of:

(a) making measurements of impedance at various points on the element by means of electrodes (“... features according to the invention are provided by a fingerprint sensor comprising an array of electric field sensing electrodes, a dielectric layer on the electric field sensing electrodes with the dielectric layer for receiving a finger adjacent thereto...”

at column 2, line 64; Now with specific reference to Figure 7, the various points that are measured by means of electrodes as exhibited at Figures 5 and 6, the active elements or measurements of impedance which result from one or more active semiconductive layers, for example at numerals 65 and 66 will be measured further to define further limitations of measurements of impedance);

and (b) determining whether the impedance measurements (Z) satisfy a law of variation of the impedance measured by the electrodes (“With specific regards to Figures 8-10, “...the sensing elements 30a operate at very low currents and at very high impedances.”

Once that data is gathered and processed, the impedance measurements are processed at Figure 24, numeral 200. Figure 24, numeral 202 is a low-level description of the law of variation being satisfied throughout the processing and determination of the method as claimed. For further support, in other terms, a first capacitor 83 (FIG. 9) is defined

between the excitation electrode 71 and the sensing electrode 78, and a second capacitor 85 is defined between the finger skin 79 and ground.” at column 7, line 22);

as a function of the surface area (S) of the electrodes covered by the element such that

$Z = f_{\text{sub}}(S)$  “For example, the output signal from each sensing electrode 78 is

desirably about 5 to 10 millivolts to reduce the effects of noise and permit further

processing of the signals. For clarification, Examiner is citing the surface area to be

associated with Figure 6, numeral 78, the measurement of the diameter of the electrode

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(sensing element) with further clarification to say "The approximate diameter of each sensing element 30a, as defined by the outer dimensions of the shield electrode 80, may be about 0.002 to 0.005 inches in diameter." at column 7, line 33).

**Regarding Claim 13: (New)**

Setlak discloses the steps of: (a) measuring a first impedance value between two first electrodes with a predetermined surface area (Refer to Figure 5, numeral 30a)  
(b) measuring a second impedance value between two second electrodes with a predetermined surface area (Please also refer to Figure 5, numeral 30a; "The sensor 30 includes a plurality of individual pixels or sensing elements 30a arranged in array pattern as shown perhaps best in FIGS. 4 and 5." at column 6, line 39)  
(c) checking that the points defined by the first impedance value and second impedance value and the surface areas of the first and second electrodes belong to the same curve satisfying the said variation law (Refer to Figure 11, numeral 92 and 93).

**Regarding Claim 14:** Setlak discloses the steps of: (a) making a first measurement of impedance between two first electrodes with a first predetermined surface area and determining the curve satisfying the variation law (Refer to Figure 5, numeral 30a)  
(b) making a second measurement of impedance between two second electrodes with a second predetermined surface area (Please also refer to Figure 5, numeral 30a; "The sensor 30 includes a plurality of individual pixels or sensing elements 30a arranged in array pattern as shown perhaps best in FIGS. 4 and 5." at column 6, line 39)  
and (c) checking that the point defined by the second impedance measurement and second predetermined surface area values belong to an area of tolerance situated around the curve (Refer to Figure 11, numeral 92 and 93).

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It shall be noted, "An annularly shaped shield electrode 80 surrounds the sensing electrode 78 in spaced relation therefrom. As would be readily appreciated by those skilled in the art the sensing electrode 78 and its surrounding shield electrode 80 may have other shapes, such as hexagonal, for example, to facilitate a close packed arrangement or array of pixels or sensing elements 30a." at column 7, line 4).

**Regarding Claim 15:** Setlak discloses wherein the second impedance measurement is made randomly between two electrodes of the same size and two electrodes of different sizes (Refer to Figure 5, numeral 30a, accordingly as stated above, "the approximate diameter of each sensing element 30a, as defined by the outer dimensions of the shield electrode 80, may be about 0.002 to 0.005 inches in diameter." This variation can be randomly selected between any number of electrodes of the same size and /or with different sizes.

**Regarding Claim 16:** Setlak discloses wherein the second impedance measurement is made alternately between two electrodes of the same size and between two electrodes of different sizes (Refer to Figure 7; "A relatively thick dielectric layer 67 will reduce the capacitance between these two structures and thereby reduce the current needed to drive the excitation electrode. The various signal feed through conductors for the electrodes 78, 80 to the active electronic circuitry may be readily formed as would be understood by those skilled in the art." at column 7, line 44).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 17, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setlak (US 6,067,368).

**Regarding Claim 17:** Setlak discloses a fingerprint sensor adapted to determine the living character of an element carrying a fingerprint ("A fingerprint sensor includes an array of fingerprint sending elements and associated active circuits and an impedance matrix filter connected to the active circuits for filtering the signals." at abstract), the sensor comprising: (a) at least four electrodes, at least two of which have smaller surfaces than two other with larger surfaces (Refer to Figure 3, numeral 30a or Figure 8, numeral 130); (b) means for measuring the impedances at least between on the one hand two electrodes with small surfaces and on the other hand two electrodes with larger surfaces (Refer to Figure 8, numeral 131), and (c) means of checking that the impedances measured by the measuring means follow a predetermined law of variation of the impedance as a function of the surface area of the electrodes used for the measurement ("Filter control means may operate the switches 137 to perform processing of the signals generated by the active circuits 131. In one embodiment, the fingerprint sensing elements 130 may be electric field sensing electrodes 78, and the active circuits 131 may be amplifiers 73 (FIG. 2)." at column 8, line 66).

It shall also be noted that although the configuration of the electrodes as disclosed at Figure 3 and Figure 8 respectively does not actually limit the actual size the electrode by presentation considering that the electrodes are not drawn to scale and that the block

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diagrams can represent any multitude of electrodes or sensing elements in multiple forms or dimensions.

Setlak does not specifically disclose that the sensor comprises at least four electrodes, at least two of which have smaller surfaces than two other with larger surfaces, however,

It would have been obvious to one of ordinary skill in the art to substitute one of the known "sensing elements" for another "sensing element" with a new or different configuration, as any number of sensing elements would have yielded predictable results at the time of the invention. For example, if the sensing element as disclosed at Figure 8, numeral 130 had a smaller variation of that element that comprised a smaller sensing element inside of the larger sensing element as shown at numeral 130, the substitution of that larger sensing element with the smaller element inside (meaning inside the sensing element or device) or attached (to the sensing element or device) would have been obvious.

**Regarding Claim 18:** Setlak discloses wherein the two electrodes with smaller surfaces are less distant from each other than the two electrodes with larger surfaces (Refer to Figure 11; "The approximate diameter of each sensing element 30a, as defined by the outer dimensions of the shield electrode 80, may be about 0.002 to 0.005 inches in diameter. ... provided for cooperating with the synchronous demodulator means 170 for synchronously demodulating signals at first and second phase angles ( $\theta_1$ ), ( $\theta_2$ ), generating an amplitude ratio thereof, and comparing the amplitude ratio to a predetermined threshold to determine whether the object is a live fingerprint or other object. Accordingly, the synchronous demodulator 170 may be readily used to generate

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the impedance information desired for reducing spoofing of the sensor 30 by an object other than a live finger. The first angle ( $\theta_1$ ) and the second  $\theta_2$  may have a difference in a range of about 45 to 90 degrees, for example. Other angles are also contemplated by the invention as would be readily appreciated by those skilled in the art." at column 11, line 6).

**Regarding Claim 22:** Setlak discloses further comprising an optical system producing an image of the fingerprint and determining the surface area of the electrodes not entirely covered by the fingerprint (Refer to Figure 3, numeral 30).

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hestnes (US 6,778,686 B1) in combination with Setlak (US 5,943,441), hereinafter referred to as Setlak '441.

**Regarding Claims 19-21:** Hestnes discloses a fingerprint sensor adapted to determine the living character of an element carrying a fingerprint ("The present invention relates to capacitive sensing of topological variations in the structure of an object. The invention particularly relates to a sensing device sensing topological variations in the structure of a finger or a fingertip, and to a so-called fingerprint recognition system." at column 1, line 10), the sensor comprising:

(a) a first set of four single-piece electrodes with identical large surfaces and a second set of two electrodes in the form of intersecting combs with identical surfaces less than the identical large surfaces ("...to each sensor element four digital signals are presented and to select the functionality of a sensor element, the same functionality for both the X and the Y selection lines have to be selected. This will be further described with

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reference to FIG. 4." at column 8, line 39; Additionally, "FIG. 7 is a figure similar to that of FIG. 6 showing an alternative sensing device 11. In this embodiment separate conducting means 12 is arranged to provide an ohmic contact with the finger 4. The separate conducting means 12 here acts a transmitting electrode. All sensor elements are selected to act either as receivers or to be inactive. The sensing device 11 can be programmed to operate either using direct sensing principle or using reflective sensing principles." at column 10, line 38);

(b) means for measuring the impedances between electrodes selected from the group consisting of: the two electrodes with smaller surfaces; two of the electrodes with larger surfaces; and one of the electrodes with smaller surfaces and one of the electrodes with larger surfaces ("According to this embodiment, the transmitting elements transmit pulsating voltage signals which are provided to the object, for example the finger, the variations in topological pattern of which is to be sensed, and the receiving elements measure the capacitively transferred signal which is reflected back to the sensing device. In other words, the device acts as a reflective sensor." at column 3, line 55);

Setlak teaches and (c) means of checking that the impedances measured by the measuring means follow a predetermined law of variation of the impedance as a function of the surface area of the electrodes used for the measurement (Refer to Figure 12, specifically, numeral 191).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to add together the means for checking the impedance measurements follow[ing] the predetermined law of variation as taught by Setlak with the fingerprint sensor elements comprising the steps of claimed elements 19(a) and 19(b) because the

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step of checking the measurements as a function of the area of the electrodes would best allow the user to analyze and “set the range for the A/D converters 180, [to measure] the peaks [which] can be readily positioned as desired to thereby account for the variations discussed above and use the full resolution of the A/D converters 180.”

(Setlak-column 11, line 19)

**Specifically, Regarding Claim 20:**

Hestnes in combination with Setlak '441 discloses all the claimed elements of Claim 19.

However, Hestnes in combination with Setlak does not specifically disclose a first and second set of four-single piece electrodes with identical[ly] large surfaces.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to add together (or combine) a first set of four single-piece electrodes with [an] identically large surface with a second set of four single-piece electrodes with [an] identically large surface because a skilled artisan would readily appreciate that the settings and/or range of variation can be further manipulated and thus makes the fingerprint sensing and matching more reliable and also it would create a larger database for comparison of multiple images of the finger. (Setlak, “Background”, column 1, line 11). The combination and / or substitution of a first and second set of four single piece electrodes would yield a predictable result to one of ordinary skill in the art.

**Specifically, Regarding Claim 21:**

Hestnes in combination with Setlak '441 discloses all the claimed elements of Claim 19.

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However, Hestnes in combination with Setlak does not specifically disclose a first, a second and a third set of two-single piece electrodes with identical[ly] large surfaces.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to add together (or combine) a first and a second set of two single-piece electrodes with [an] identically large surface with a third set of two single-piece electrodes with [an] identically large surface because a skilled artisan would readily appreciate that the settings and/or range of variation can be further manipulated and thus makes the fingerprint sensing and matching more reliable and also it would create a larger database for comparison of multiple images of the finger. (Setlak, "Background", column 1, line 11). The combination and / or substitution of a first, second and third set of two single piece electrodes would yield a predictable result to one of ordinary skill in the art.

### ***Conclusion***

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

US 6,314,195

US 6,282,304

US 6,647,133

US 6,438,257

US 6,633,656

US 5,920,640

US 6,052,475

US 6,175,641

US 6,333,989

US 6,292,576

US 5,673,041

US 5,5864,296

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is 571-270-1583. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

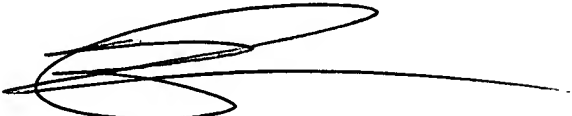
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mia M Thomas  
Examiner  
Art Unit 2624

*Mia M. Thomas*



BRIAN WERNER  
SUPERVISORY PATENT EXAMINER